

Listing Of Claims:

1 through 81 - Cancelled.

82. (New) An adaptive drive system for a motor vehicle comprising, in combination,

a first drive line having a first drive shaft, a first differential, a first pair of axles, a first pair of wheels and at least one first speed sensor for providing a first drive line speed signal,

a second drive line having a second drive shaft, a second differential, a second pair of axles, a second pair of wheels and at least one second speed sensor for providing a second drive line speed signal,

a transfer case having an input, a first output adapted to drive said first drive line, a second output adapted to drive said second drive line and a clutch operably disposed between said first output and said second output, and

a controller for receiving a first speed signal from said first speed sensor and a second speed signal from said second speed sensor, determining the difference between said first and said second speed signals, increasing electrical current to said clutch by a predetermined amount in response to said speed signal difference exceeding a computed threshold and increasing said electrical current to said clutch by additional predetermined amounts while said speed signal difference exceeds said computed threshold.

83. (New) The adaptive drive system of claim 82 wherein said predetermined amounts are equal in magnitude.

84. (New) The adaptive drive system of claim 82 wherein said predetermined amounts are equal in duration.

85. (New) The adaptive drive system of claim 82 wherein said controller decreases said electrical current by predetermined amounts while said speed signal difference is less than said computed threshold.

86. (New) The adaptive drive system of claim 82 further including a throttle position sensor providing a signal to said controller and wherein said predetermined amounts reduce in magnitude as said signal from said throttle position sensor increases.

87. (New) The adaptive drive system of claim 82 wherein said speed signals represent an average speed of an associated said pair of wheels.

88. (New) The adaptive drive system of claim 82 wherein said controller provides a minimum electrical current to said clutch.

89. (New) The adaptive drive system of claim 88 wherein said controller reduces said predetermined amounts as said minimum electrical current is increased.

90. (New) The adaptive drive system for a motor vehicle comprising, in combination,

a first drive line having a first differential, a first pair of axles, a first pair of wheels and at least one first drive line speed sensor,

a second drive line having a second differential, a second pair of axles and a second pair of wheels and at least one second drive line speed sensor,

a clutch operably disposed between said first drive line and said second drive line, and

a microcontroller for receiving data from a plurality of sensors including said first and second drive line speed sensors and computing a slip threshold, increasing said electrical current to said clutch in steps so long as said sensed wheel speed difference exceeds said computed slip threshold.

91. (New) The adaptive drive system of claim 89 wherein said microcontroller decreases said electrical current to said clutch in steps when said speed signal difference no longer exceeds said computed slip threshold.

92. (New) The adaptive drive system of claim 90 wherein said steps are of equal magnitude.

93. (New) The adaptive drive system of claim 90 wherein said steps are of equal duration.

94. (New) The adaptive drive system of claim 90 wherein said microcontroller provides a minimum electrical current to said clutch.

95. (New) The adaptive drive system of claim 94 wherein said microcontroller reduces said steps as said minimum electrical current is increased.

96. (New) The adaptive drive system of claim 94 wherein said microcontroller adjusts said minimum electrical current in response to a signal from a throttle position sensor.

97. (New) The adaptive drive system of claim 90 wherein a greater number of said steps corresponds to smaller magnitudes of said steps.

98. (New) The adaptive drive system of claim 90 wherein said steps are a function of one of throttle position and brake system activation.

99. (New) An adaptive drive system for a motor vehicle comprising, in combination,

a first drive line having a first differential, a first pair of axles and a first pair of wheels,

a second drive line having a second differential, a second pair of axles and a second pair of wheels,

a clutch operably disposed between said first drive line and said second drive line,

a plurality of vehicle condition sensors including first and second drive line speed sensors.

a controller for receiving data from said plurality of vehicle condition sensors including said drive line speed sensors, computing a speed difference based upon

data from said drive line speed sensors, computing a slip threshold based upon data received from said plurality of sensors and increasing electrical current to said clutch by predetermined amounts if said sensed speed difference exceeds said slip threshold and continuing to increase said clutch current by said predetermined amounts while said wheel speed difference exceeds said slip threshold.

100. (New) The adaptive drive system of claim 99 wherein said predetermined amounts are equal in magnitude.

101. (New) The adaptive drive system of claim 99 wherein said predetermined amounts are equal in duration.

102. (New) The adaptive drive system of claim 99 wherein said plurality of sensors includes a throttle position sensor and a brake activation sensor.

103. (New) The adaptive drive system of claim 99 said controller decreases said electrical current by said predetermined amount when said speed signal difference no longer exceeds said slip threshold.

104. (New) The adaptive drive system of claim 99 wherein said controller provides a minimum electrical current to said clutch.

105. (New) The adaptive drive system of claim 104 wherein said controller reduces said predetermined amounts as said minimum electrical current is increased.

106. (New) The adaptive drive system of claim 99 wherein said controller adjusts said minimum electrical current in response to a signal from a throttle position sensor.

107. (New) The adaptive drive system of claim 99 wherein said driveline speed sensors provide an average speed of an associated said pair of wheels.